REMARKS

Claims 1-10 remain in the application, with independent claims 1 and 6 amended to more particularly define the invention and further distinguish the cited prior art.

Reconsideration is respectfully request for claims 1-10 as amended.

Claims 1-3 and 6-8 have been finally rejected under 35 USC 102(b) as being anticipated by Lang et al. U.S. Patent no. 5,671,741, and dependent claims 4, 5, 9 and 10 have been rejected under 35 USC 103(a) as being unpatentable over Lang et al. as applied to claims 1-3 and 6-8 and further in view of Farace et al. U.S. Patent No. 5,995,863.

In finally rejecting claims 1-3 and 6-8, the Examiner reapplies Lang et al. which was previously cited in rejecting claims and then withdrawn in subsequent rejections. The Examiner now maintains that Lang et al. disclose a method for analyzing injured tissue and evaluating quality of repaired tissue based on quantized magnetic resonance data using an MRI measurement acquisition system which includes calculating and quantifying the magnetic resonance parameters on a pixel by pixel basis, determining biological properties of interest of repaired tissue structure, and correlating quantitative ranges of the selected MR parameters with selected biological properties of interest to determine extent of injury or state of tissue repair.

In rejecting dependent claims 4, 5, 9 and 10, the Examiner combines Lang et al. with the previously cited Farace et al. The Examiner notes that Lang et al. is silent as to display method, the Examiner referring to Farace et al. as displaying MR image data with a display monitor where images may be color or grayscale to differentiate the type of tissues being displayed.

These rejections are respectfully traversed and believed to be in error since Lang et al . does not calculate and numerically quantify the magnetic resonance parameters on a pixel by pixel basis, as now specifically required in claims 1 and 6 as amended and in all claims depending therefrom. The deficiency is in Lang et al. and Farace et al. and other prior art applied in rejecting claims during prosecution including Paul et al. U.S. Patent No. 5,320,102 and Ackerman et al. U.S. Patent No. 6,185,444. These limitations of the prior art are specifically noted in Applicant's specification particularly on page 2, lines 6-10 which states:

> "MRI has heretofore been used in the study of the human body, particularly in imaging blood flow, organs of the body and abnormal tissue therein, and in studying neurological impairments that are not associated with structural abnormalities by imaging the brain. The use of MRI images in these studies requires that the differences in tissue can be readily imaged and necessarily leads to subjective evaluation."

As has been previously stressed by Applicants during prosecution, and now as specifically noted in claims 1 and 6 as amended, the claimed method of analyzing injured tissue and evaluating quality of repaired tissue based on quantized magnetic resonance data using an

MRI measurement acquisition system, includes the step of calculating and **numerically** quantifying the magnetic resonance parameters on a pixel by pixel basis, and then correlating quantitative ranges of the selected magnetic resonance parameters with selective biological properties of interest to determine extent of injury or state of tissue repair.

As noted in Applicant's specification, the described embodiments of the invention use calculated numeric values of the magnetic resonance parameters of interest and not subjective evaluations of image intensities, for example, as in the applied prior art.

The cited Lang et al. reference does use magnetic resonance imaging for tissue characterization and does refer to calculating diffusion coefficients for regions of interest. However, nowhere in the specification does Lang actually calculate any diffusion coefficients other than through image intensities of images.

Note in column 6, lines 20-25, Lang refers to differences in molecular diffusion between viable and necrotic tissue can be detected using an MR imaging technique that can measure diffusion induced signal changes, i.e. diffusion weighted MR imaging.

Lang et al. go on to describe limitations in using the technique in imaging the brain, but in column 7, lines 7-27, Lang notes that the situation is, however, totally different in imaging other regions of the body. Lang states that in imaging the body, diffusion weighted MR imaging appears more specific than any other pre-existing technique for differentiating viable from necrotic tissue.

In column 8, lines 19-24, Lang state that the apparent diffusion of the more freely diffusing protons is manifested as **signal loss** on the observed magnitude calculated, diffusion weighted image, leaving only the slower diffusing proton motions to contribute to image intensities.

In describing embodiments of the invention, Lang et al. state in column 11, line 24 etc. that all images were obtained as multislice acquisitions for complete coverage of the tumor and surrounding nontumorous tissues. In column 12, lines 16 etc. Lang et al refer to signal intensity of different tumor regions were graded high, intermediate or low for each of the MR sequences based on visual analysis. Signal intensities of regions were measured on all sequences. Lang goes on to state that viable tumor demonstrated high signal intensity and viable tumors showed a marked increase in signal intensity, whereas necrotic tumor was seen to show marked decrease in signal intensity.

Thus the only calculations undertaken by Lang et al. are of signal intensity and not of a magnetic resonance parameter as required in the method defined by the claims as amended.

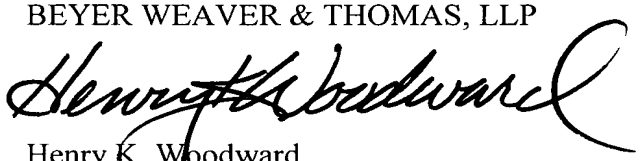
Regarding the rejection of claims 4, 5, 9 and 10 as being unpatentable over Lang et al. in view of Farace et al., it is noted that while Farace et al. may disclose the use of a display monitor for images in color or grayscale, neither Farace et al. or Lang et al. actually calculate and numerically quantify magnetic resonance parameters as does Applicant's invention.

Accordingly, it is respectfully submitted that dependent claims 4, 5, 9 and 10 are not obvious from Lang et al. and further in view of Farace et al.

Since claims 1-3 and 6-8 as amended are patentable under 35 USC 102(b) and 103 over Lang et al., and since dependent claims 4, 5, 9 and 10 are patentable under 35 USC 103(a) over Lang et al. in view of Farace et al., all as above set forth, it is requested that claims 1-10 as amended be allowed and the case advanced to issue.

Should the Examiner have any question or comment regarding the present amendment and response, a telephone call to the undersigned attorney is requested.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP



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